

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number  
**WO 2004/054433 A2**

- (51) International Patent Classification<sup>7</sup>: **A61B**
- (21) International Application Number:  
PCT/US2003/037081
- (22) International Filing Date:  
10 December 2003 (10.12.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/432,616 12 December 2002 (12.12.2002) US
- (71) Applicants (*for all designated States except US*): **DUKE UNIVERSITY** [US/US]; Office of Science and Technology, P.O. Box 90083, Durham, NC 27708-0083 (US). **MONTANA STATE UNIVERSITY-BOZEMAN** [US/US]; 304 Montana Hall, MSU, Bozeman, MT 59717 (US).
- (72) Inventors; and  
(75) Inventors/Applicants (*for US only*): **STAMLER, Jonathan, S.** [US/US]; 101 Juniper Place, Chapel Hill, NC 27514 (US). **SINGEL, David, J.** [US/US]; 3185 Summer Cutoff Road, Bozeman, MT 59715 (US).
- (74) Agent: **SPECTOR, Eric, S.**; P.O. Box 2266 Eads Station, Arlington, VA 22202 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— *without international search report and to be republished upon receipt of that report*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: FORMING IRON NITROSYL HEMOGLOBIN

(57) Abstract: Contrary to current opinion that nitrite in general oxidizes hemoglobin with elimination of active nitric oxide, deoxygenated hemoglobin reacts with low concentration inorganic nitrite to produce very stable iron nitrosyl hemoglobin which on delivery into the body is converted to a hemoglobin capable of nitric oxide delivery and provides vasodilator and antiplatelet activity. This provides basis for ameliorated risk blood product transfusions.

WO 2004/054433 A2